

TRILLIUM GRACILE (LILIACEAE), A NEW SESSILE-FLOWERED SPECIES FROM EASTERN TEXAS AND LOUISIANA¹

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TRILLIUM GRACILE sp. nov.

Ex affinitate *T. viridescens* Nutt. et *T. ludoviciana* Harbison, utraque contiguam aream geographicam occupans, ab utroque floribus minoribus, sepalis recurvis leniter prope medium, petalis brevioribus (plerumque atropurpureis, in illis virentibus supra purpureum), antheris introrsis et stigmatibus brevissimis praeclare distinguitur.

SCAPE erect, glabrous, (1.6-) 2.0-3.2 (-3.6) dm. long. BRACTS sessile, elliptic or elliptic-ovate to obovate—broadly or narrowly so, (6.0-) 6.5-9.5 (-13.0) cm. long, dark green, usually distinctly mottled with small darker spots, the apices rounded, obtuse or acute. SEPALS narrowly oblong-ovate, relatively short, (1.5-) 1.8-2.6 (-3.4) cm. long, basally spreading to horizontal, gently recurved near the middle and finally reflexed at the tips, usually dark purple adaxially or green, the apices slightly acuminate-blunt or obtuse (buds often slightly acuminate). PETALS linear-elliptic to linear-obovate, usually relatively short, (1.7-) 2.1-3.5 (-4.6) cm. long, erect, dark purple or rarely yellowish green, the apices acute or rounded. STAMENS erect, (8-) 11-17 (-19) mm. long; *filaments* (1.5-) 2-3 (-3.5) mm. long, nearly straight; *anthers* introrse on linear connectives, the connectives slightly prolonged beyond anther sacs to 0.5 (-1.0) mm. GYNOECIUM height usually reaching only slightly more than half the length of the stamens; *ovary* ovoid, (3.5-) 4-7 (-11) mm. in height, 3-angled in cross-section; *stigmas* subulate, usually very short, (1.5-) 2.0-4.5 (-6.5) mm. long, basally divergent, the tips recurved—forming with the ovary a lyre-shaped outline. FLOWERS with an odor like morel mushroom (*Morchella*). FRUIT ovoid, smooth; the stigmas withering, persistent at the apex.

HOLOTYPE: *Samejima 1039* with *Freeman* and *Channell* (GH). Abundant on a sandy bank slightly removed from small stream, 7.8 miles east of Milam on Texas Highway 21, Sabine County, Texas, 1 April 1966. Isotype at VDB; other duplicates to be distributed.

DISTRIBUTION: Open or fairly dense pine-hardwood forested slopes, stream banks and alluvium—usually rather sandy—in extreme southeastern Texas and adjacent southwestern Louisiana; locally abundant in the Upper

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Coastal Plain along the Sabine River, extending into the Lower Coastal Plain near Lake Charles, Louisiana.

Peak of flowering in early April; fruits maturing about three months after anthesis.

a. *Trillium gracile* J. Freeman forma *gracile*

The petals, stamens, stigmas and usually the sepals purple; the ovary sometimes greenish.

b. *Trillium gracile* J. Freeman forma **luteum** f. nov.

A f. *gracili* petalis staminibus carpellisque luteis vel viridi-luteis differt.

Differing from the typical form by the yellow or greenish yellow color of the petals, stamens and carpels.

HOLOTYPE: *Samejima 1039a* with *Freeman* and *Channell* (GH). Occurring with the typical form at the type locality for the species (cited above).

TABLE I
COMPARISON OF MORPHOLOGICAL CHARACTERISTICS OF
T. viridescens, *T. gracile* and *T. ludovicianum*.

Characters	<i>T. viridescens</i>	<i>T. gracile</i>	<i>T. ludovicianum</i>
Scapes	scabrous; (1.7-) 3.0-3.6 (-4.6) times bract length	glabrous; (2.4-) 3.2-3.5 (-4.3) times bract length	glabrous; (1.9-) 2.4-2.8 (-3.8) times bract length
Bracts	usually not mottled; sometimes with upper epidermal stomates near apex; apices acuminate to rarely acute	distinctly mottled; without upper epidermal stomates; apices rounded, obtuse or acute	distinctly mottled; without upper epidermal stomates; apices rounded to rounded-acute
Sepals	widely divergent or spreading; (3.5-) 3.8-5.4 (-6.3) cm. long; usually green adaxially	spreading-recurved; (1.5-) 1.8-2.6 (-3.4) cm. long; usually purple adaxially	widely spreading; (2.0-) 2.5-4.0 (-5.0) cm. long; usually green adaxially
Petals	linear-spatulate to very narrowly spatulate, distinctly clawed; the claws purple and blades greenish; (4.3-) 4.8-7.5 (-8.5) cm. long	linear-elliptic to linear-obovate, not clawed; usually purple throughout, rarely greenish; (1.7-) 2.0-3.5 (-4.5) cm. long	linear-obovate to linear, usually narrowly cuneate; the bases purple and blades greenish; (2.5-) 3.5-5.5 (-6.5) cm. long
Stamens	usually twice or more gynoeceium height; anthers lateral; pollen yellow	slightly less than twice gynoeceium height; anthers introrse; pollen creamy yellow	only one-third to one-fifth longer than gynoeceium; anthers lateral; pollen olive to orange
Carpels	ovary sharply 6-angled; stigmas about as long as ovary, very widely spreading, tips recoiled	ovary 3-angled; stigmas about one-half as long as ovary, divergent, tips recurved	ovary sharply 6-angled; stigmas about as long as ovary, divergent, tips recoiled

As with the other species of sessile-flowered *Trillium*, a complex of characters is diagnostic for *T. gracile*. Its closest allies are *T. viridescens* Nutt. and *T. ludovicianum* Harbison, each of which has a range adjoining that of the new species. Plants of *T. gracile* have been treated as *T. ludovicianum* in the past, but a comparison of representative specimens of these morphogeographical taxa reveals several mutually delimiting characteristics which warrant their recognition as distinct species. The features distinguishing *T. viridescens*, *T. gracile* and *T. ludovicianum*, the first two of which occur only west of the Mississippi River, are compared in Table I.

The field characters distinguishing *Trillium gracile* from its nearby relatives are the smaller usually dark purple flowers, introrse anthers with creamy yellow pollen, three-angled ovaries and relatively short stigmas. This combination of features contributes to a slender and graceful appearance that is unusual among the species of sessile-flowered *Trillium*. Plants of the other species are usually robust, or even coarse in appearance, and the flowers relatively large. The epithet *gracile* alludes to the aspect of slenderness that results from the combination of slender scapes (usually more than three times the length of the bracts), usually narrowly elliptic bracts and relatively small flowers.

The occurrence of pure yellow-flowered forms in local populations of predominantly purple-flowered *Trillium* has been recorded in two species other than *T. gracile*. The flower color extreme recognized here as *T. gracile* f. *luteum* is believed to represent a genetic variant analogous to *T. sessile* f. *viridiflorum* Beyer and *T. recurvatum* f. *Shayi* Palmer and Steyerl. The only feature distinguishing these forms from their purple-flowered counterparts is the absence of anthocyanin pigments in all the inner floral parts. Such yellowish extremes of variation occur spontaneously in populations of typical plants, evidently throughout the respective ranges of the species.

To assure a fixed standard of comparison, the terminology for plane shapes recommended by the Systematics Association Committee of the International Association for Plant Taxonomy in Taxon 11: 145-156 (1962) has been employed in the above description and discussion. Additional data on (and a detailed map of) the distribution of *Trillium gracile* in Texas, based upon the specimens cited here and more recent collections, are to be presented in a later jointly-authored paper. The writer wishes to acknowledge the curators of herbaria for the loan of specimens cited below and Dr. R. B. Channell, under whose direction this research was done.

DISTRIBUTIONAL CITATIONS

LOUISIANA. BIENVILLE PAR.: 4 mi. n. of dam, e. side of Lake Bistineau, 21 Apr. 1958, *McDaniel 13* (Louisiana Polytechnic Institute Herbarium). CALCASIEU PAR.: Vicinity of Calcasieu R., ca. 2.5 mi. n. of Lake Charles, 22 Mar. 1958, *Reese and Harris 1688* (FSU, GH, LAF, VDB); 1 mi. ne. of Moss Bluff, 17 June 1966, *Thieret 23562* (LAF). NATCHITOCHE PAR.: ca. 2 mi. s. of Bellwood, 7 Apr. 1966, *Thieret 22311* (LAF); Natchi-

toches, 17 Apr. 1915, *Palmer* 7260 (CAS, K, NY, US); ca. 3 mi. s. of Provençal, 17 Apr. 1966, *Thieret* 22312 and 22313 (LAF); Saline, 26 Mar. 1956, *Moore* 6597 (GH, Louisiana Polytechnic Institute Herbarium). SABINE PAR.: 5.2 mi. w. of Hornbeck along La. 473, 18 Mar. 1965, *Kral* 23384 (VDB); along Bayou LaNana, ca. 7 mi. sw. of Many, 7 Apr. 1966, *Thieret* 22294 (LAF); ca. 3 mi. w. of Many, 7 Apr. 1966, *Thieret* 22309 (LAF).

TEXAS. JASPER CO.: 5.5 mi. s. of Jasper, s. side of Zion Hill, 12 Apr. 1962, *Correll* and *Correll* 24965 (LL); s. of Jasper off highway 96, between road to Magnolia Springs and road to Roganville, 14 Apr. 1963, *Correll* and *Correll* 27226 (LL); ca. 7 mi. s. of Jasper, 20 Apr. 1964, *Correll* 29404 with *Rosier* (LL); off U. S. Hwy. 190, se. of Jasper, 21 Mar. 1945, *Lundell* 13367 (LL); 4.2 mi. s. of jct. of U. S. Hwy. 190 on Texas Farm Road 777, sw. of Jasper, 31 Mar. 1966, *Samejima* 1037 with *Freeman* and *Channell* (VDB). JEFFERSON CO.? (probably cultivated): Beaumont, 1 Apr. 1936, *Hooks* s.n. (TEX). NEWTON CO.: 8 mi. e. of Burkeville, 11 June 1946, *Correll* and *Correll* 12578 (LL, SMU); w. side of Burkeville along Little Cow Creek, 17 Mar. 1965, *Kral* 23343 (VDB); ca. 7.5 mi. w. of Burkeville on Tex. Hwy. 63, 31 Mar. 1966, *Samejima* 1036 with *Freeman* and *Channell* (VDB); 4 2/3 mi. s. of Newton, 4 Apr. 1947, *Cory* 52601 (FSU, NY, TAES), 5 Apr. 1947, *Rowell*, *York* and *Tharp* 47199 (GH, TEX); 2.8 mi. w. of Sabine R. bridge on Tex. Hwy. 63, 31 Mar. 1966, *Samejima* 1035 with *Freeman* and *Channell* (VDB); just s. of Toledo, off road from Burkeville, 13 Apr. 1962, *Correll* and *Correll* 24973 (LL). SABINE CO.: 12 3/4 mi. s. of Bronson, 20 Apr. 1950, *Cory* 57266 (BUT, CAS, MIN, SMU); 3 mi. n. of Brookland, 6 Apr. 1947, *Rowell*, *York* and *Tharp* 47215 (BUT, CAS, DAV, DUKE, GH, IA, ILL, IND, ISC, KANU, KSC, LCU, MIN, MO, NCU, NSC, NY, OKL, OKLA, OSC, PH, SMU, TEX, UARK, UC, UMO, US); 4.7 mi. w. Geneva, 18 Mar. 1965, *Kral* 23370 (VDB); 7.5 mi. e. of Hemphill, 30 Mar. 1962, *Correll* and *Correll* 24882 (LL); Milam, 27 Apr. 1963, *Demaree* 47381 (VDB); 7.8 mi. w. of Milam on Tex. Hwy. 21, 1 Apr. 1966, *Samejima* 1039 with *Freeman* and *Channell* (GH-type, VDB), 1039a (GH-type of *f. luteum*). SAN AUGUSTINE CO.: 7 mi. e. of San Augustine, 17 Mar. 1962, *Correll* and *Correll* 24832 (LL); 8 mi. ne. of San Augustine, 18 Mar. 1965, *Kral* 23356 (VDB); San Augustine, 2 Apr. 1918, *Palmer* 13251 (BKL, MO, US, WIS). SHELBY CO.: ca. 5 mi. e. of Aiken, 8 Apr. 1964, *Correll* and *Correll* 29074 (LL); Sabine National Forest, East Hamilton Recreation Area along Sabine R., 6 Apr. 1966, *Correll* and *Correll* 32417 (LL).